

CLAIMS

We Claim:

1 1. A system for absorbing an impact, said system comprising:
2 a blow molded thermoplastic energy absorbing member comprising;
3 opposing first and second walls defining a hollow space;
4 a plurality of fused pairs of recessed ribs, each said fused pair comprising first and
5 second recessed ribs;
6 said first recessed rib is integrally molded from said first wall and having a first
7 recessed rib end;
8 said second recessed rib is integrally molded from said second wall and having a
9 second recessed rib end;
10 said first and second recessed ribs being integrally fused at a welded surface
11 disposed between said first and second recessed rib ends;
12 an average distance from said first wall to said welded surface is about
13 approximately 15.0 to 45.0 mm;
14 an average distance from said second wall to said welded surface is about
15 approximately 15.0 to 45.0 mm; and
16 said hollow space having an average height between said first wall and said
17 second wall of about approximately 30.0 to 90.0 mm.

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1 2. The system according to claim 1, further comprising an interlocking rib
2 disposed on said first wall, integrally coupled to at least two of said first recessed ribs.

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1 3. The system according to claim 1 further comprising an interlocking rib
2 disposed on said second wall, integrally coupled to at least two of said second recessed
3 ribs.

1 4. The system according to claim 1 further comprising a first interlocking rib
2 disposed on said first wall, integrally coupled to at least two of said first recessed ribs and
3 a second interlocking rib disposed on said second wall, integrally coupled to at least two
4 of said second recessed ribs.

1 5. The system according to claim 2, wherein said interlocking rib has a depth of
2 'b' mm wherein $3.0 \leq b \leq \sqrt{(a/0.5)}$ where 'a' is the average distance in millimeters
3 between said first and second walls.

1 6. The system according to claim 2, wherein the recessed ribs are disposed on a
2 plurality of virtual straight lines 'c', said lines 'c' being oriented at an angle of about
3 approximately 30 to 60° from line 'd', said line 'd' being a line along a row of said fused
4 pairs of recessed ribs, said interlocking ribs being formed along at least one said line 'c'.

1 7. The system according to claim 2, wherein said interlocking ribs are formed
2 such that a total length of all the interlocking ribs is in a range of 10 to 60% with respect
3 to a total length of all the lines 'c'.

1 8. The system according to claim 2, wherein the interlocking ribs are a recessed
2 groove.

1 9. The system according to claim 1, further comprising a swelling part disposed in
2 said first recessed rib end.

1 10. The system according to claim 9, wherein said swelling part is formed in a
2 hollow shape.

1 11. The system according to claim 1, further comprising a stepwise part projecting
2 from the welded surface.

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1 12. The system according to claim 1, further comprising at least one unfused pair
2 of recessed ribs having an interval disposed between said first and second recessed rib
3 ends.

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1 13. The system according to claim 12, wherein said fused pairs of recessed ribs
2 comprise 50 to 80% of a total number of a sum of said fused and unfused pairs of
3 recessed ribs.

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1 14. The system according to claim 12, wherein said first unfused recessed rib end
2 has a surface chosen from the group of surfaces consisting of a concave surface and a
3 convex surface and said second unfused recessed rib end has a surface of the group not
4 chosen by said first recessed rib.

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1 15. A system for the absorption of an impact, said system comprising:
2 a blow molded thermoplastic energy absorbing member comprising;
3 opposing first and second walls defining a hollow space;
4 a plurality of recessed ribs integrally molded from said first wall and extending toward
5 the second wall;
6 said recessed ribs comprising a fused recessed rib end;
7 said fused recessed rib ends being integrally fused to said second wall at a welded
8 surface; and
9 wherein a height of said recessed ribs from the first wall to the welded surface is about
10 approximately 15.0 to 45.0 mm.

1 16. The system according to claim 15, further comprising an interlocking rib
2 formed in said first wall, integrally linking at least two adjacent fused recessed ribs.

1 17. The system according to claim 16, wherein the recessed ribs are disposed on a
2 virtual straight line, said interlocking ribs being formed along at least one line 'c', said
3 line 'c' being oriented at an angle of about approximately 30 to 60° from line 'd', said
4 line 'd' being a line along a row of said fused pairs of recessed ribs.

1 18. The system according to claim 15, further comprising a swelling part disposed
2 in a welded surface.

1 19. The system according to claim 15, further comprising at least one unfused
2 recessed rib comprising an unfused recessed rib end; and
3 an interval disposed between said unfused recessed rib end and said second wall.

1 20. The system according to claim 19, wherein said fused recessed ribs comprise
2 50 to 80% of a total number comprising the sum of said fused and unfused recessed ribs.